Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_

**Microscope Tutorial and Labeling Worksheet**

Ms. OK, Pre-AP Biology, 2014-2015

The most familiar type of microscope is the standard light microscope. The base and arm are usually one single piece of metal. The arm is the correct place to grip the microscope when carrying it while supporting the base with the palm of your other hand. The stage is the platform that supports the specimen to be observed. The stage has a hole in its center to allow light to pass through, so specimens (on glass slides) must be positioned over the top of this hole.  You can control how much light goes through the specimen by adjusting the diaphragm. It has a range of 1 to 5, with 5 being the most light.  Since any slight movement of the specimen is magnified many times, the slide is usually held down by a pair of stage clips.

Light microscopes use either a light bulb/lamp or a mirror as their light source. Never use direct sunlight; it may damage your eyes.  The switch for this light is usually found on the base of the microscope, and sometimes on the power cord.

After the light has passed through the specimen, it enters the objective lens (often called "objective" for short). The shortest of the three objectives is the scanning-power objective lens and has a power of 4X.  The second objective is the low-power objective, which is almost always made to produce a magnification of 10 times (10X). The high-power objective lens has a magnification of 40X.

The body tube allows the light from the objective to pass upward to form the first magnified image; that image is further magnified by the eyepiece or ocular. The eyepiece is usually 10X.

The total magnification obtained is the product of the eyepiece times that of the objective lens. You can easily switch objectives by turning the revolving nosepiece.

The coarse adjustment knob is the larger knob on your microscope. You will use this primarily to focus on your specimen by moving the stage up and down. DO NOT USE THE COARSE ADJUSTMENT KNOB ON HIGH POWER (40X), it will crack your slide. The fine adjustment knob is used for small changes in focus. You use this to move the stage up and down SLIGHTLY after you have focused with the coarse adjustment knob.

**Questions:**

1. What two structures on the microscope will you use to focus on your specimen?

2. Why should you never use the coarse adjustment knob on high power?

3. What will happen if you use direct sunlight to observe your specimen?  
  
4. Our microscopes have three objectives. What are their powers?

5. What is the magnification of the ocular lens?

6. What is the shortest objective called?

7. How do you switch objectives?

8. Which structure controls how much light passes through the specimen?

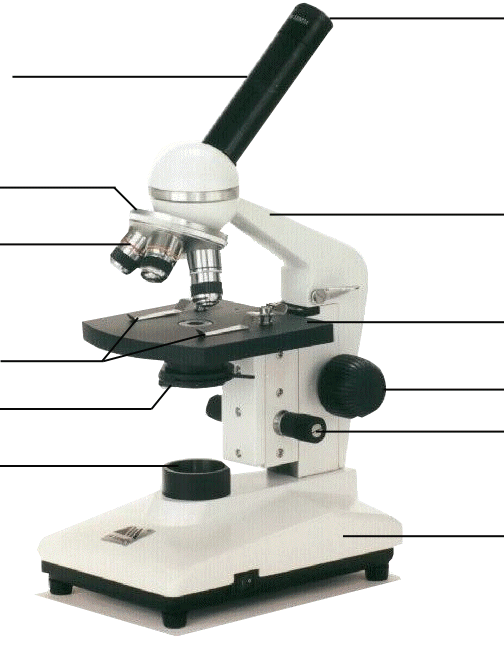
9. You should carry the microscope by placing your palm on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and gripping the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with your other hand.

10. How can you prevent your slide from slipping on the stage?

**Labeling:**

Please use the words from this word list to identify the parts of the microscope. When you can identify a part of the microscope place the matching word on the line which points to that part of the microscope.

|  |  |  |
| --- | --- | --- |
| Arm | Ocular Lens / Eyepiece | Power Switch |
| Objective Lenses | Base | Revolving Nose Piece |
| Course Adjustment Knob | Fine Adjustment Knob | Diaphragm |
| Body Tube | Stage | Stage Clips |
| Light Source |  |  |



**Matching Functions:** Please match the following parts of the microscope with their functions.

